

The South African genera *Pachyphymus* Uvarov, *Xenotettix* Uvarov and *Duplessisia* gen. n. (Orthoptera, Acridoidea).

by

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(Submitted through C. du Plessis, Locust Control and Research, Pretoria)

Gen. *PACHYPHYMUS* Uvarov 1922.

The genus *Pachyphymus* was erected by Uvarov (1922) on the basis of *Calliptamus cristulifer* Serville 1838, with only the female sex known. The genus was regarded as "somewhat related, probably, to *Acorypha* Krauss and *Acoryphella* G.—Tos. Its proper systematic position cannot be defined until the male is known".

The males of this species are now available and it is possible to confirm that the genus belongs to the group *Euryphymi*, both because of the external characters and the structure of the phallic complex, particularly the epiphallus, which is characteristic for that group.

Since the type of *Calliptamus cristulifer* Serv. is lost and the original description is inadequate, the neotype is designated here and the species re-described. A second, new species of the genus is also described below.

Pachyphymus cristulifer (Serville, 1838). (Figs. 1-7).

1838. *Calliptamus cristulifer*, Serville, Hist. nat. Ins. Orth.: 692.

1870. *Caloptenus cristulifer* Walker, Cat. Derm. Salt. Brit. Mus., 4: 690.

1902. *Euryphymus cristulifer* Martinez, Ann. Soc. esp. Hist. nat., 30: 261, 272.

1910. *Acrotylus cristulifer* Kirby, Syn. Cat. Orth., 3: 264.

1922. *Pachyphymus cristulifer* Uvarov, Trans. ent. Soc. Lond.: 173.

♂ (Neotype). Cape Province; Olifants River, between Citrusdal and Clanwilliam. South African Museum.

Small and rather slender, strongly rugose and tuberculate.

Antennae slightly longer than head and pronotum together, rather thick, filiform, of 22 segments. Head strongly carinate, rugulose and tuberculate. Fastigium of vertex broad, concave, strongly and roundly sloping forwards with strong lateral carinulae, which are converging in front and continuous with the carinulae of the frontal ridge. Frontal ridge with strong carinulae, parallel in the upper and convergent in the basal half; flat and rugulose above

the ocellus, concave below it. Facial carina strong, irregular, divided in two branches in the upper part. Occipital carinula present. Pronotal prozona with a high crest, divided by the first sulcus in two high, acute teeth; metazona with a high median carina; lateral carina irregular, tuberculate, broadly interrupted by transverse sulci; posterior margin of metazona angulate with rounded apex; the whole pronotal disc strongly rugulose and tuberculate. Prosternal tubercle low, almost square in cross-section, with rounded apex. Mesosternal interspace wider than its length; mesosternal lobe also wider than its length with broadly rounded internal margin. Metasternal interspace as long as broad. Elytron well produced beyond hind knee, broad throughout, with the anterior margin slightly projecting at the base and with rounded apex. Wing slightly shorter than elytron, moderately broad. Hind femur rather slender, exceeds the end of abdomen.

Last abdominal tergite strongly sclerotized, its lower posterior angle strongly lobiform projecting; in the middle of the posterior margin there is a small tooth-like projection. Supra-anal plate transverse, with a longitudinal concavity in the middle and with a pair of large strongly sclerotized tubercles in the basal half; lateral margins upcurved; posterior margin with two lateral and one median projections. Subgenital plate short, with rounded apex. Cercus short, robust, plate-like compressed in the upper half, with external angle slightly attenuate and subacute.

Epiphallus with short ancorae and very broad lobiform lophi.

General colouration greyish-brown, with indistinct brown spots. Lateral lobe of pronotum in lower anterior part with a large brown spot, which includes a small triangular ochraceous callosity. Basal disc of wing cherry-red; anterior and external margins blackish. Upper surface of hind femur in the middle with a brown fascia; internal disc and lower surface brown. Hind tibia pale yellowish with a brown ring in the basal half. Spines of the same colour as tibia with brown apices.

♀. As the male, but larger. Subgenital plate trilobate, with a small median lobe. Ovipositor short, comparatively slender, with slightly curved valves.

Length of body ♂ 14.8–16 (neotype), ♀ 18.3–20; pronotum ♂ 3.7, ♀ 4.8–5; elytron ♂ 14.4–14.8, ♀ 19.2–20; hind femur ♂ 9–9.3, ♀ 11.6–12 mm.

Cape Province: Olifants River, between Citrusdal and Clanwilliam, Oct.-Nov. 1931, 1 ♂ (Neotype in the South African Museum). Klaarstroom, Prince Albert, Oct. 1952, 2 ♀ Namaqualand: Klip Vlei, Garies, Nov. 1931, 1 ♂, 3 ♀ (South African Museum). Calvinia, 11–16 Nov. 1931, 3 ♀, J. Ogilvie (British Museum).

The male from Namaqualand differs from the neotype (Fig. 1) by more rugose head and pronotum and by lower and more obtuse teeth of the pronotal carina (Fig. 6). The series of females shows all transitional forms in this respect, and I regard this as a variation, often observed in strongly sculptured species in other genera. There is also some difference in the shape of the male cercus in the neotype (Fig. 3) and the Namaqualand specimen (Fig. 7),

but it is not possible to decide whether this is not merely individual variation as only two males are available.

***Pachyphymus carinatus* sp.n. (Figs. 8-12).**

♂ (Type). Cape Province; Steinveld. British Museum. (Natural History). Small and slender, very strongly rugose and tuberculate.

Antennae as long as head and pronotum together, of 22 segments.

Whole head covered by sharp carinulae and tubercles. Fastigium of vertex broad, strongly sloping forwards and strongly concave; its lateral carinulae very high, angulate, projecting forwards, with lateral external branches, which form deep triangular foveolae open anteriorly; the carinulae are slightly converging anteriorly and continuous with the carinulae of frontal ridge.

Frontal ridge constricted below the ocellus and slightly widened at the base; in the upper two thirds with very deep sulcus and high carinulae; just above the ocellus with an irregular transverse carinula; at the base strongly punctured. Facial carina strong and high, irregular. Occipital carinula strong, raised in the middle. Pronotal prozona with a high crest, divided by the first transverse sulcus in two high rounded lobes; median carina in metazona sharp, strongly raised towards posterior end; lateral carina broadly interrupted by transverse sulci, represented by irregular tubercular projections in prozona and a sharp ridge in metazona; whole disc of pronotum strongly rugulose and tuberculate; posterior margin of metazona angulate, with rounded apex and incurved sides. Prosternal tubercle of moderate height, almost square in cross-section, with apical surface rounded and sloping backwards. Mesosternal interspace wider than its length; mesosternal lobe slightly wider than its length, with rounded internal margin. Metasternal interspace as long as broad. Elytron well produced behind end of abdomen, moderately narrow, narrowing at the apex which is rounded, with anterior margin weakly projecting near the base. Wing moderately broad, scarcely shorter than elytron. Hind femur comparatively short, slender, slightly exceeds end of abdomen.

Last abdominal tergite strongly sclerotized, its lower posterior angle strongly lobiform, projecting; posterior margin in the middle with a small projection.

LEGEND

1 — 5. *Pachyphymus cristulifer* (Serville)

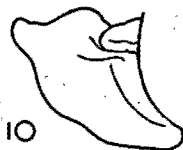
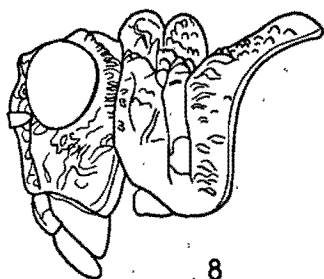
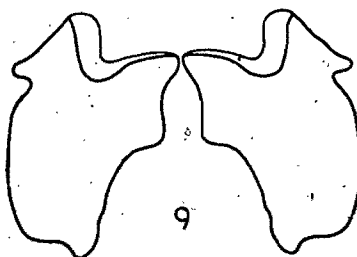
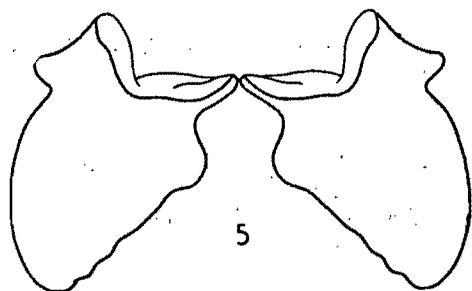
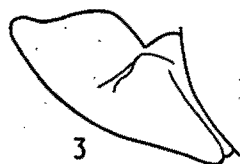
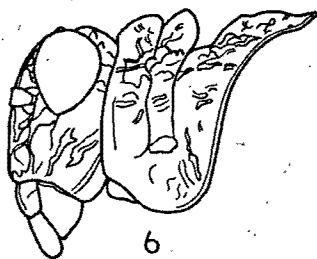
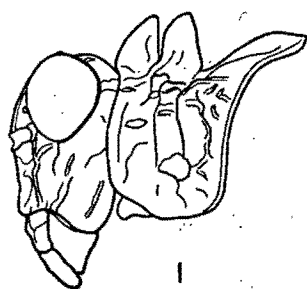
Neotype ♂, 1, head and pronotum in profile. 2, end of abdomen in profile. 3, cercus, lateral view and slightly from above. 4, supra-anal plate. 5, epiphallus.

6 — 7. *Pachyphymus cristulifer* (Serville)

♂ from Namaqualand. 6, head and pronotum in profile 7, cercus, lateral view and slightly from above.

8 — 12. *Pachyphymus carinatus* sp.n.

(Type ♂). 8, head and pronotum in profile. 9, epiphallus. 10, cercus, lateral view and slightly from above. 11, supra-anal plate. 12, end of abdomen in profile.



Supra-anal plate transverse, with a longitudinal concavity in the middle; on the sides of the concavity near the base there is a pair of large, strongly sclerotized round tubercles and laterally a pair of elongated tubercles; sides in the apical half upcurved; posterior margin with a narrow apical projection. Subgenital plate short, subconical. Cercus short, robust, in the basal two thirds almost cylindrical, in apical third plat-like, compressed, with external angle attenuated and subacute.

Epiphallus with short ancorae and very broad, lobiform, with apical projection, lophi.

General colouration brownish-grey, with irregular brown and grey spots. Basal disc of wing pellucid, almost colourless, with slight greenish-blue tinge; in the apical part there is an infumate fascia, diffusing towards posterior margin. Hind femur above with a brown fascia in the middle; internal disc and lower side dark brown. Hind tibia light greyish with small brown dots and an indistinct brown ring near the base. The spines with brown apices.

♀ (Paratype). As the male, but larger. Subgenital plate trilobate, with a large median lobe. Ovipositor short, comparatively robust, with slightly curved valves.

Length of body ♂ 16.4, ♀ 18—19.6; pronotum ♂ 3.8, ♀ 3.8—4.3; elytron ♂ 16.6, ♀ 18.1—20.2; hind femur ♂ 9, ♀ 9.5—10 mm.

Cape Province: Steinveldt, June 1948, 1 ♂ (type), 1 ♀. Kenhardt, Nov. 1948, 2 ♀. Gordonia, Nov. 1948, 1 ♀. Upington, Prieska, Apr. 1955, 1 ♂, D. H. Botha (British Museum).

The new species differs from *P. cristulifer* Serv. by the very high, angular lateral carinulae of fastigium of vertex; by the crest of metazona of pronotum being lower and with the rounded lobes; by shorter hind femur; by the shape of the male cercus and female subgenital plate; by the colouration of wings, and by other characters mentioned in the description.

Gen. XENOTETTIX Uvarov 1925.

The genus *Xenotettix* with two species *X. calcarata* and *X. armipes* (type of the genus), was described by Uvarov in 1925. He placed the new genus into the subfamily *Oedipodinae*, but remarked that systematic affinities of *Xenotettix* are uncertain and the presence of the prosternal tubercle approximates it to the *Catantopinae*. A study of the phallic complex, made it now possible to establish that *Xenotettix* belongs to the subfamily *Catantopinae*, the whole phallic organ and the epiphallus being of the type common in this subfamily (Fig. 17).

It is still very difficult, however, to place the genus within the subfamily and to find its related genera. The specialized anterior tibia is unique in *Acridoidea*. The strongly sloping forwards, almost vertical, fastigium of the vertex separated from the frontal ridge by the angular furrow is shared by the genera *Fitzgeraldia* Uvarov 1952, *Jinabia* Uvarov 1952 (both from Arabia), and *Iranella* Uvarov 1924 (from Persia) but in other characters these genera are very different (The three genera mentioned were regarded as members of

the *Oedipodinae* but a study of the male genitalia revealed that they also belong to the *Catantopinae*. Possible affinity of *Xenotettix* with *Fitzgeraldia* and *Jinabia* was indicated by Uvarov when the last two genera were described (Linn. Soc. Journ. 42, no. 248, 1952, p. 189).

It might be suggested to consider *Xenotettix* as a genus probably very early isolated and with no close affinity to other known genera.

The types of all species of the genus are preserved in the British Museum (Natural History).

Key to species.

- 1 (6) Calcaria of the hind tibia of normal shape or with slightly expanded sides.
- 2 (5) Disc of pronotum slightly rugulose or almost smooth.
Frons, in profile, almost straight.
- 3 (4) Anterior tibia strongly broadened at the apex. Internal disc and lower side of the hind femur and hind tibia blood-red or orange yellow.
armipes Uv.
- 4 (5) Anterior tibia moderately broadened at the apex. Internal disc and lower side of the hind femur and hind tibia light yellowish.
albicans Mill.
- 5 (2) Disc of pronotum strongly rugulose and tuberculate. Frons, in profile, comparatively convex.
rugulosa sp.n.
- 6 (1) Calcaria of the hind tibia elongated, widened and flattened.
calcarata Uv.

X. armipes Uvarov 1925. (Fig. 17).

1925. *X. armipes* Uvarov, Ann. Natal Mus., 5, 2: 172, figs. 9-12.

Only the originally described series of this species from Cape Province, Prince Albert (type locality) and Klipplaat, was known. Now, four females and two males from Tankwa Karoo, Renoster River, Cape Prov. (S. African Museum), are known and they differ from the original series by slightly larger size (female 26 mm.), darker general colouration with small black spots on the elytra and orange-yellow internal disc and lower side of the hind femur and hind tibia, instead of blood-red as in the original series. No structural differences were found.

X. calcarata Uvarov 1925.

1925. *X. calcarata*, Uvarov, Ann. Natal Mus., 5, 2: 175, figs. 13-17.

1929. *X. calcarata*, Uvarov, Ann. S. Afr. Mus., 29, 1: 53.

The species is still known only from "36 m. E. of Port Nolloth" (type locality) and from Kubib, S. W. Africa.

X. albicans Miller 1932.1932. *X. albicans*, Miller, Trans Ent. Soc. Lond., 80: 30, fig. 13.

The species was described on the basis of a single female from Aus, S.W. Africa. Now 13 males and 5 females have been collected by Dr. B. P. Uvarov at Jagbult, 75 miles E. of Kenhart, Cape Prov. 9.10.1955.

The male differs from the female by much smaller size (length of body 11 mm.), and narrower interocular space, which is as wide as the middle antennal segments. Subgenital plate small, conical with obtuse apex. Supra-anal plate simple, triangular. Cercus short, conical, compressed laterally, with obtuse apex.

Xenotettix rugulosa sp.n. (Figs. 13-16).

Type ♀. Cape Province, Matjesfontein, British Museum.

Body comparatively small, robust and rugulose.

Antenna shorter than head and pronotum together, with 21 segments. Interocular space broader than the first antennal segment. Fastigium of vertex concave, almost square; angular furrow between fastigium of vertex and frontal ridge weak, almost obliterated; frontal ridge flat, with slight depression below ocellus. Pronotum strongly and roughly rugulose and tuberculate, the disc wide, narrowing forwards, and almost flat, posterior margin of metazona obtusangulate, with rounded apex. Prosternal tubercle low, transverse, strongly compressed, with slightly excised apex. Meso- and metasternal interspaces about twice as broad as long. Elytron slightly exceeds apex of the abdomen. Wing comparatively narrow. Tympanum large, open. Specialized calcaria and spines on the anterior tibia short, the two apical ones thick, the rest relatively slender. Middle tibia with the normal calcaria and spines. Hind femur moderately slender; internal calcaria of the hind tibia half as long again as the external ones, and with slightly expanded sides. Arolium as long as a claw.

Supra-anal plate simple, triangular. Subgenital plate slightly and broadly trilobate. Ovipositor short and broad with strongly acute and curved valves; the lower valve in the basal half with a large, tooth-like lateral projection.

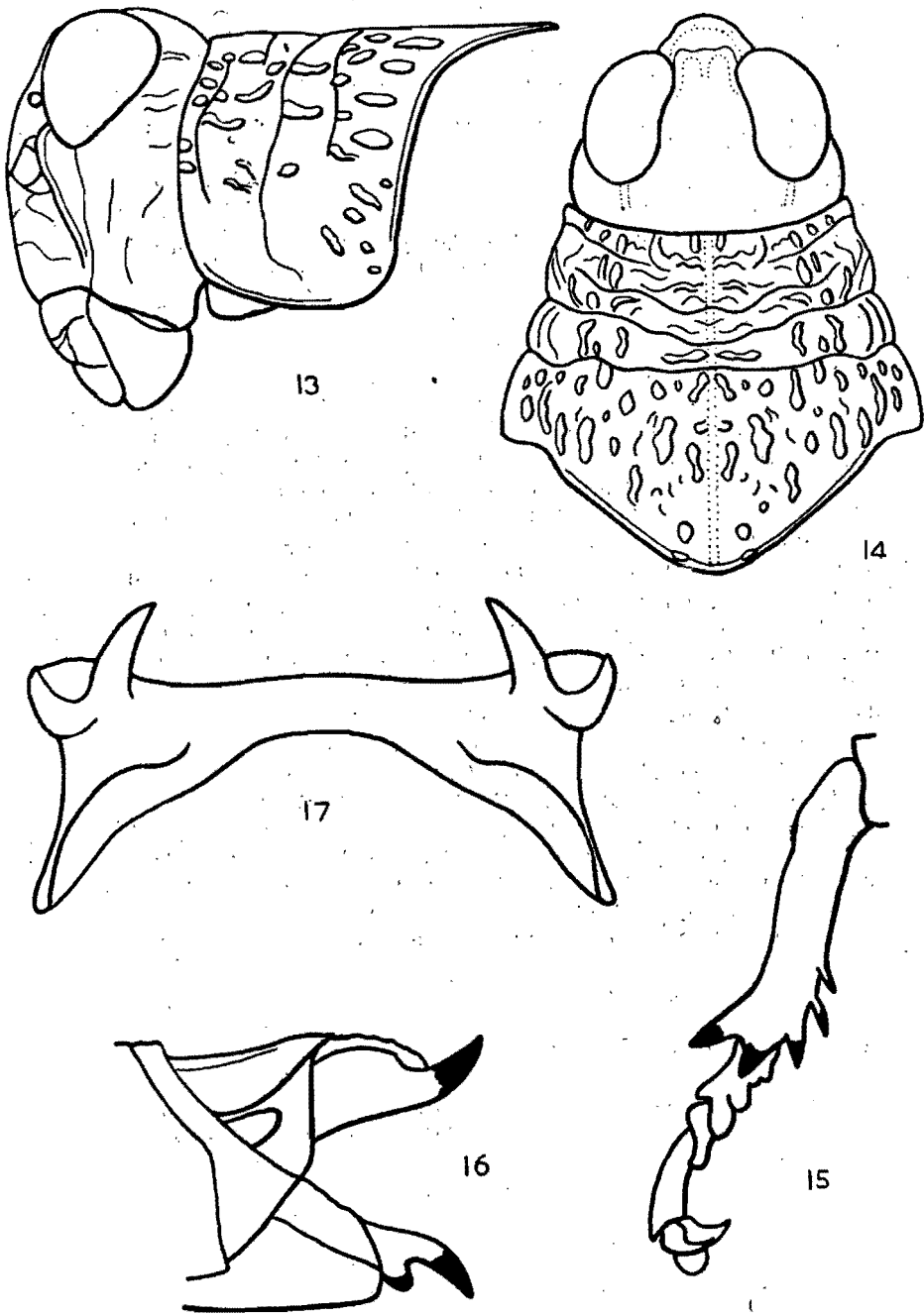
General colouration brown. Wing pellucid, with slight bluish tinge. Pleura with a pair of lustrous black spots. External disc of the hind femur brownish-grey, with ochraceous lower carinula, with a row of small black spots; the lower external side of the femur blackish; the lower internal side and internal disc pale ochraceous with two dark brown fasciae on the upper half of the disc.

LEGEND

13—16. *Xenotettix rugulosa* sp.n.

13, head and pronotum, in profile. 14, ditto, from above. 15, anterior tibia and tarsus externally. 16, end of abdomen, in profile.

17. *Xenotettix armipes* Uvarov, epiphallus.



Hind knee at the base on both sides with a blackish incomplete fascia. Hind tibia bluish-grey, at the apical fourth blackish; spines black.

Length of body 17.6, pronotum 3.8, elytron 12.8, hind femur 10.6 mm.

South Africa: Cape Province, Matjesfontein, 12.10.1955, 5 ♀, including type (B. P. Uvarov).

The new species is near to *X. armipes* Uvarov 1925, but differs from it by the smaller size of body, more prominent face, more projecting fastigium of vertex, strongly rugulose and tuberculate pronotum, less broadened apex of the anterior tibia and less robust specialised calcaria and spines.

Duplessisia Gen.n.

Of medium size, robust.

Antenna filiform, thick. Head above spherically convex; fastigium of vertex roundly sloping forwards, triangular, with a pair of large, flat, but distinct, upper fastigial foveolae; interocular space slightly broader than the first antennal segment, shallowly concave, with the lateral carinulae parallel to the edges of the eyes. Frons slightly sloping backwards. Frontal ridge roundly projecting between the bases of antennae, with indistinct carinulae.

Pronotum subcylindrical, slightly tectiform; median carina weakly marked; the lateral ones absent; posterior end of metazona elongated acutangulate; three broad transverse sulci present, the third one strongly deepened and widened. Prosternal tubercle short, conical. Mesosternal lobe broader than its length, with rounded angles; mesosternal interspace almost square. Elytron shortened, does not reach end of abdomen; subcosta, radius and its sector in the apical third strongly curved forwards; reticulation dense but regular. Wing broad, with widely rounded apex. Hind femur short, robust; hind knee scarcely reaching apex of the abdomen. Hind tibia distinctly shorter than hind femur. External apical spine of hind tibia absent. Arolium large, longer than claw. Tympanum large, open. Supra-anal plate simple triangular. Male subgenital plate short, subconical; in female with broadly obtusangulate apex. Male cercus short, robust, with bifurcate apex.

Epiphallus of usual catantopoid type, with strong ancorae and broad lobiform lophi.

Type-species: *Duplessisia sulcata* sp.n.

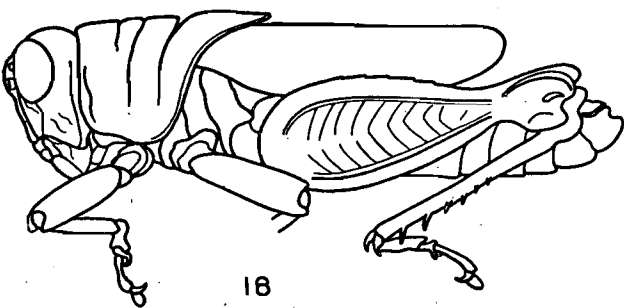
Duplessisia sulcata sp.n. (Figs. 18-24).

♂ Type. Keetmanshoop, S. W. Africa. British Museum (Natural History). Body rugulose. Frontal ridge slightly depressed and weakly constricted

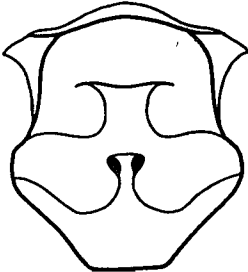
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18—24. *Duplessisia sulcata* gen. and sp.n., male type.

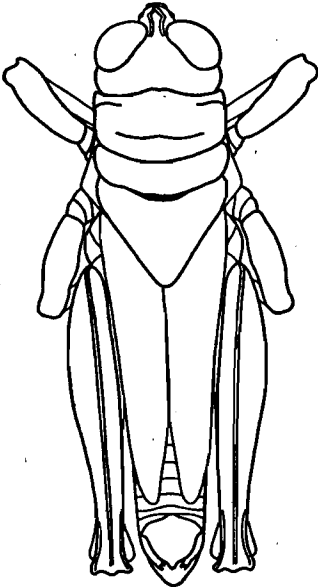
18, lateral view. 19, ditto, from above. 20, sternum. 21, elytron and wing. 22, end of abdomen, lateral view. 23, ditto, from above. 24, epiphallus.



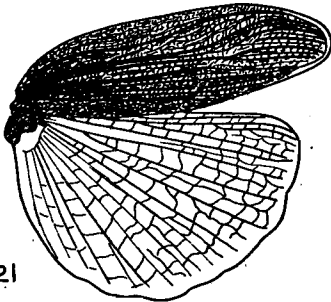
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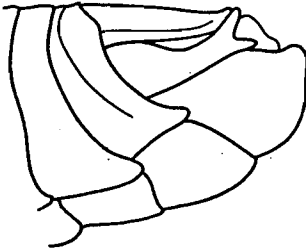
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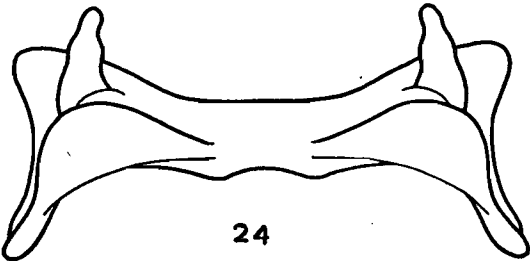
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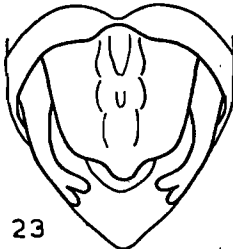
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23

below ocellus. Facial carinula broad, irregular. Ocelli large. Eyes large, oval, weakly convex. Lateral lobe of pronotum longer than its depth, with sinuate lower margin. Metasternal interspace triangular, open. Elytron broad, ratio of length to maximal width 3.3, with slightly narrowing rounded apex. Ratio of length to maximal width of hind femur 2.8; the upper carina serrated; fish-bone pattern of the external disc regular. Lower lobe of hind knee rounded. There are six external and nine internal tibial spines, which are short at the base of tibia, becoming gradually longer towards the apex. Spurs short and broad.

General colouration light brown. Posterior margin of the occiput dark brown, almost black. Venation and reticulation of elytron light brown, membrane dark brown. Wing light blue. Hind knee black. Internal disc of hind femur red. Hind tibia at the base blackish, in the basal fourth lightish brown and in the remaining part red; the spines dirty ochraceous with brown apices.

♀ (Paratype). As the male, but larger. Antenna with 25 segments. Mesosternal interspace broader than its length.

Ovipositor short, robust, with broad moderately curved valves.

Length of body ♂ 27.4, ♀ 33.5? (shrunk); pronotum ♂ 9, ♀ 12.8; elytron ♂ 13.2, ♀ 20.3; hind femur ♂ 14.2, ♀ 20 mm.

S.W. Africa: Keetmanshoop, 17.4.1937, 1♂ type, C. du Plessis leg. (British Museum). Bushman Land, Vioolsdrift, 5 miles North, 13.9.1950, 1♀ (Paratype), G. Van Son leg. (Transvaal Museum, Pretoria).

The new genus and species has no close connection with any known genus of the subfamily *Catantopinae*. Superficially, it resembles the smaller representatives of the group *Cyrtacanthacrini*, but in the shape of the mesosternal lobes and all other characters it differs strongly from that group.

The roundly projecting frontal ridge and the strongly deepened and broadened third pronotal sulcus suggest a certain relationship of the new genus with genera of the *Serpusiae* group, and with the group *Apobolei*, but the venation, the shape of pronotum and the male cercus are very different from both.

The shape of pronotum, form of wing and to a certain extent, the venation of elytron suggests also a remote relationship of *Duplessisia* with the Malayan genus *Bibracte*, but all other characters are different.

The genus is named, on the suggestion of Dr. B. P. Uvárov, in honour of Mr. C. du Plessis, Chief Locust Officer, Union of South Africa, who collected the type, as a tribute to his life-long work in locust research and control in that country.